Claims

1. Assay method for studying the effect of at least one compound on RNA virus entry, RNA replication, transcription or encapsidation, the method comprising the steps of:

(a) providing an RNA molecule containing (i) at least a portion of the genome of an RNA virus of interest, (ii) a copy of a reporter gene flanked by viral regulatory sequences to direct RNA synthesis by a viral RNA polymerase and (iii) one or more sequences of RNA encoding packaging signals, the RNA molecule being packaged within a virus-like particle;

(b) incubating a cell containing the RNA molecule with the or each compound, the cell being capable of causing the replication of the RNA molecule; and

(c) detecting the presence of any reporter gene product.

2. Assay method according to claim 1, wherein the RNA virus is a negative strand RNA virus.

3. Assay method according to claim 1, wherein the RNA molecule is produced by (i) introducing an RNA molecule encoding (1) at least a portion of the genome of an RNA virus of interest, (2) a copy of a reporter gene flanked by viral regulatory sequences to direct RNA synthesis by the viral RNA polymerase and (3) one or more sequences of RNA encoding packaging signals, into a cell infected with the cognate virus; or (ii) introducing a plasmid capable of directing the synthesis of the RNA molecule into a cell infected with the cognate virus and containing the components required to enable the plasmid to direct synthesis of the RNA; or (iii) introducing a plasmid capable of directing the synthesis of the RNA molecule containing the genes necessary for virus replication and packaging into a cell containing the components required to enable the plasmid to direct synthesis of the RNA and containing the components required for viral replication and transcription.

4. Assay method according to claim 3, wherein the RNA molecule defined in step (i) is either negative-sense or positive-sense RNA.

5. Assay method according to any one of claims 1 to 4, wherein the reporter gene is a heterologous reporter gene.

6. Assay method according to any preceding claim, wherein the RNA molecule is incapable of independent replication and the cell in step b contains components necessary for replication and packaging of the RNA molecule.

7. Assay method according to any preceding claim, wherein the RNA molecule may or may not lack one or more genes encoded by the native genome of the negative-strand RNA virus.

8. Assay method according to any preceding claim, wherein the negative-strand RNA virus is a paramyxovirus.

9. Assay method according to claim 8, wherein the negative-strand RNA virus is human respiratory syncytial virus (RSV), or avian pneumovirus (APV).

10. Assay method according to any preceding claim, wherein the reporter gene is chloramphenicol acetyltransferase (CAT), luciferase, green fluorescent protein (GFP), β-galactosidase, or secreted alkaline phosphatase.

11. An antiviral or a proviral compound identified by use of an assay method according to any preceding claim.

12. A kit for use in an assay method according to any preceding claim comprising an RNA molecule packaged into an infectious virus particle and encoding (i) at least a portion of the genome of an RNA virus, (ii) a copy of a reporter gene and (iii) one or more sequences of RNA encoding packaging signals.

13. A kit according to claim 12, wherein the RNA virus is a negative-strand RNA virus.

14. A kit according to claim 13, wherein the RNA virus is RSV or APV.

15. A kit according to claim 12, claim 13 or claim 14, additionally comprising instructions for carrying out the assay method according to any one of claims 1 to 10.